



Making Use of a Decade of Widely Varying Historical Data

SARP project “Full Life-cycle Defect Management”

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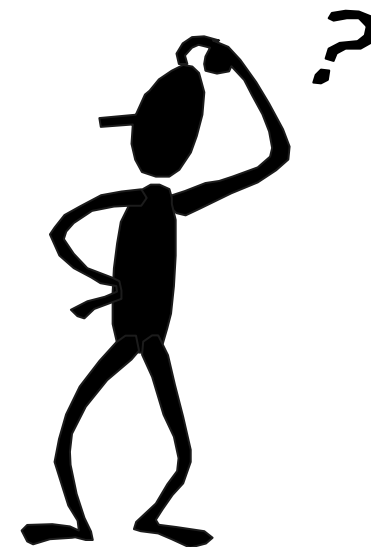
Dr. Carolyn Seaman





Problem we are addressing

- We are in the **second year of our initiative** and studying
 - **Parameters** that affect the results of inspection
 - The **relation between V&V effectiveness** in early lifecycle (e.g. inspection) and late (testing)
- We are using this information to **provide feedback** and decision support to NASA projects, on questions such as:
 - *Can I get guidance on how to plan my inspections based on results from projects like my own?*
 - *Based on my inspection results, what are the implications for the effort required to be spent on other non-optional activities, like system testing?*

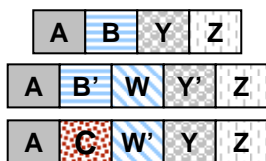




Unifying different defect classifications

- **Motivation:** Valuable defect data has been collected over the years across many Centers and projects
- **Issue:** Different defect classifications used in historic and contemporary data sets, as well as across Centers;
- **Action:** Definition of a unified defect classification schema and mapping of existing data sets into this unified schema
- **Benefits:**
 - Leverages data required by NPR 7150.2 for analysis and feedback to teams
 - Enables monitoring and validation of existing guidelines
 - Unified classification schema is applicable to inspections and testing

existing data sets
(historic and contemporary)



actions

Map historical data to new categorization if possible;
partition remaining historical categories and refine new
schema if needed

unified data set for
contemporary project feedback

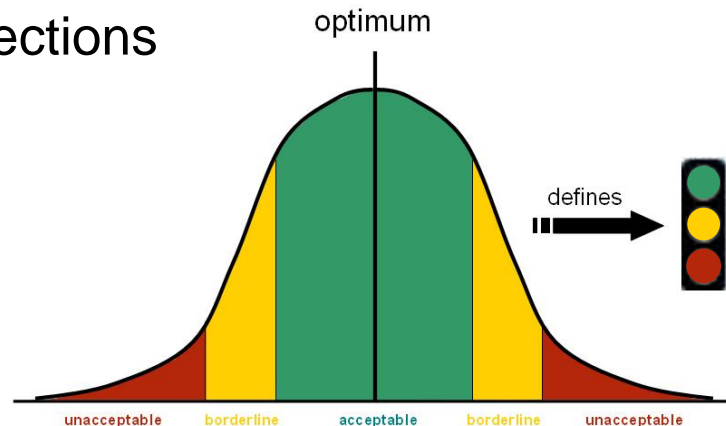
ODC-based new schema





Updating existing inspection standards

- NASA guidelines for effective inspections formulated in early 1990's
 - Number of participants
 - Page rate
 - Meeting length
- **Validating** these standards based on a wider set of more recent data
- **Refining** the standards – adding more variables, tailoring to different domains
- New standards built into
 - inspection support **tool**
 - inspection **training**
- Refined standards will increase **effectiveness** of inspections in terms of effort expended and defects found

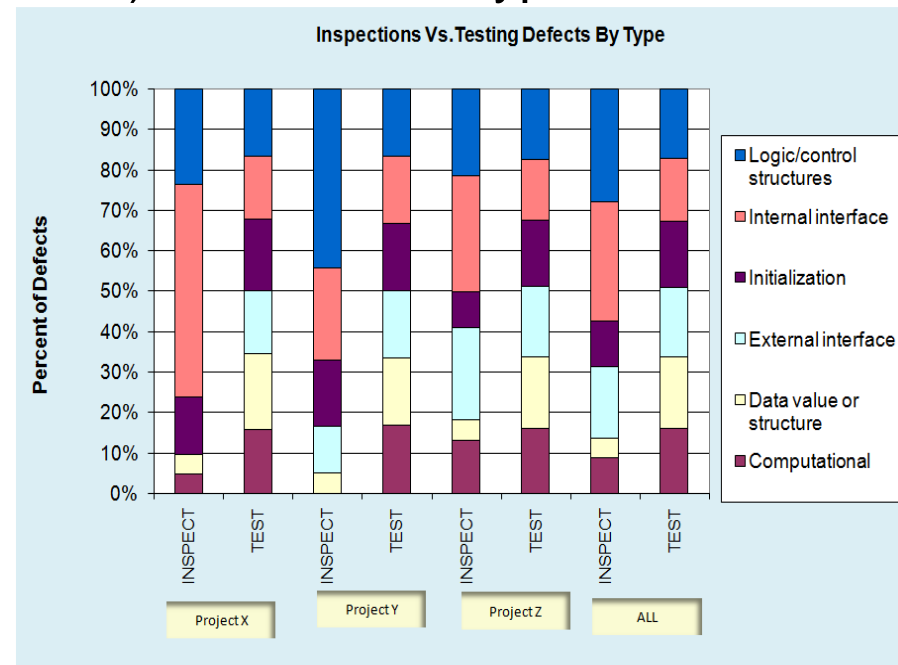




Comparing test and inspection data

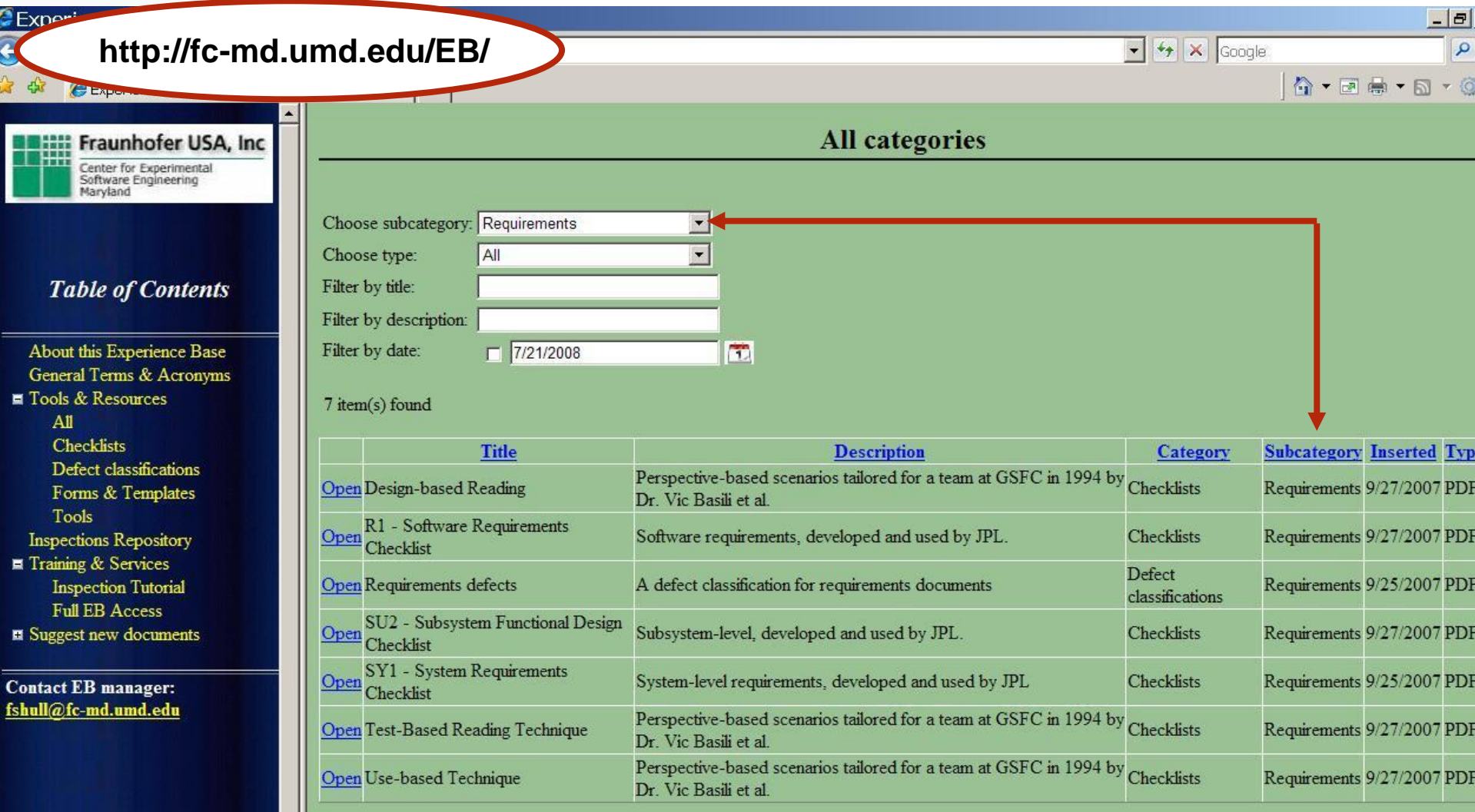
Research Questions:

- What defects types are typically removed by **inspections** vs. **testing**?
- What project characteristics (size, language, software domain, new development/enhancements) influence the types of defects found?
- What percent of logic errors can be expected to be removed by **inspections**?
- Can **test results** be used for post-mortem analysis of **inspection performance**?



Providing an inspection experience base

<http://fc-md.umd.edu/EB/>



Fraunhofer USA, Inc.
Center for Experimental
Software Engineering
Maryland

Table of Contents

- About this Experience Base
- General Terms & Acronyms
- Tools & Resources
 - All
 - Checklists
 - Defect classifications
 - Forms & Templates
 - Tools
- Inspections Repository
- Training & Services
 - Inspection Tutorial
 - Full EB Access
- Suggest new documents

Contact EB manager:
fshull@fc-md.umd.edu

All categories

Choose subcategory: Requirements
Choose type: All
Filter by title:
Filter by description:
Filter by date: 7/21/2008

7 item(s) found

	Title	Description	Category	Subcategory	Inserted	Type
Open	Design-based Reading	Perspective-based scenarios tailored for a team at GSFC in 1994 by Dr. Vic Basili et al.	Checklists	Requirements	9/27/2007	PDF
Open	R1 - Software Requirements Checklist	Software requirements, developed and used by JPL.	Checklists	Requirements	9/27/2007	PDF
Open	Requirements defects	A defect classification for requirements documents	Defect classifications	Requirements	9/25/2007	PDF
Open	SU2 - Subsystem Functional Design Checklist	Subsystem-level, developed and used by JPL.	Checklists	Requirements	9/27/2007	PDF
Open	SY1 - System Requirements Checklist	System-level requirements, developed and used by JPL	Checklists	Requirements	9/25/2007	PDF
Open	Test-Based Reading Technique	Perspective-based scenarios tailored for a team at GSFC in 1994 by Dr. Vic Basili et al.	Checklists	Requirements	9/27/2007	PDF
Open	Use-based Technique	Perspective-based scenarios tailored for a team at GSFC in 1994 by Dr. Vic Basili et al.	Checklists	Requirements	9/27/2007	PDF

Improving tool support for inspections

Dashboard Tool 0.9.0

File Help

Dashboard

Inspection
Plan Inspection
Enter Results
Manage Inspections

Projects
Enter Project
Manage Projects

Reports
View Report

ExperienceBase

Settings

Start

Statistic

State

Location

Start Enter Results X

Characteristics Project Document Type

Data Source (Optional)

Checklists used Filter

available Documents

Name	Type	Action
Guidelines for "User/Develc	Word	View
JPL Excel Sheet	Excel	View
JPL Guidelines	Word	View

marked

Name	Type	Action
JPL Excel Sheet	Excel	JPL Excel She

Results

Meeting Date: major: 7
Completion Date: minor: 14

Participants:

Document Size: LoC:

file import
capability

built-in
experience
base
access

reporting
and
evaluation
capabilities



Accomplishments so far

- 2529 unified inspection records in database
 - more data sets are welcome
- Initial tool that supports inspection planning and reporting
 - (test) users are welcome to try the tool
- Tool can accept data from JPL forms as well as various databases
 - possibility of later integration into NASA's eRoom
- Central inspection experience base available
 - <http://fc-md.umd.edu/EB>
- Accepted papers at ESEM and IEEE Software
 - additional publications are currently under review or planned

**More details are provided as part of
our technical presentation**





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Inspection Experience Base on-line at:
<http://fc-md.umd.edu/EB>

